

## CLAIMS

We claim:

5           1.     A microelectronic power supply system comprising an array of power regulators coupled together, wherein each regulator in the array is configured to provide power to a portion of a microelectronic device.

          2.     The microelectronic power supply system of claim 1, further comprising an  
10 intermediate regulator coupled to said array.

          3.     The microelectronic power supply system of claim 2, wherein said intermediate regulator is a switching power regulator.

15           4.     The microelectronic power supply system of claim 3, wherein said intermediate regulator provides power to a microelectronic device and to said array of power regulators.

          5.     The microelectronic power supply system of claim 1, further comprising a power  
20 converter.

          6.     The microelectronic power supply system of claim 1, further comprising electronic components coupled to said array of power regulators.

          7.     The microelectronic power supply system of claim 6, wherein said electronic  
25 components include capacitors.

          8.     The microelectronic power supply system of claim 1, wherein said array is formed using SiGe.

9. The microelectronic power supply system of claim 1, wherein said power regulators of said array comprise linear regulators.

5 10. The microelectronic power supply system of claim 1, wherein at least one of said regulators of said array comprises a transistor and an error amplifier.

11. The microelectronic power supply system of claim 1, wherein a plurality of said regulators of said array are coupled together in parallel.

10 12. The microelectronic power supply system of claim 1, wherein a plurality of collector regions of said regulators of said array are coupled together.

13. The microelectronic power supply system of claim 1, wherein said array  
15 comprises conductive bumps.

14. A microelectronic regulator array comprising a plurality of regulators coupled together in parallel, said array configured to provide about 110 amps at more than about 500 MHz.

20 15. The microelectronic regulator array of claim 14, wherein at least a portion of collector regions of said regulators are coupled together.

16. A tiered power regulation system comprising:  
25 an intermediate power regulator; and  
a regulator array comprising a plurality of power regulators, wherein at least a portion of the plurality of power regulators are coupled to a common voltage source.

17. The tiered power regulation system of claim 16, wherein said intermediate power

regulator is a switching regulator.

18. The tiered power system of claim 16, wherein at least one of said plurality of regulators is a linear power regulator.

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